Factoring by Grouping

⇒ Often these problems will have 4 terms

1. Cut the problem in half
2. Factor each half using the GCF
3. Pull the GCFs together and write the answer in factored form ( )( )
   "Distributive property"

Ex 1: $a^3 - 4a^2 + 3a - 12$

$a^2(a-4) + 3(a-4)$ ← the "leftovers" have to match

$$\boxed{(a^2+3)(a-4)}$$

Ex 2: $2x^2 - x + 6x - 3$

$x(2x-1) + 3(2x-1)$

$$\boxed{(x+3)(2x-1)}$$

Ex 3: $2yx - 6y + x - 3$

$2y(x-3) + 1(x-3)$

$$\boxed{(2y+1)(x-3)}$$